ΛΙΘΟΛΟΓΙΑ.

A TREATISE OF THE Stone & Gravel THEIR *Causes, Signs, & Symptoms,* With methods for their *Prevention* and *Cure.*

LIBR. CANT. ACAD.

And some Account also of The manner of the *COLLOTIAN* Section.

Written in *Latin* by *Joh. Groeneveldt* Dr. of Physick, and Lithotomist.

And rendred into *English.*

——— Qui potuit rerum cognoscere Causas,
Ille metus omnes, & inexorabile fatum
Subjecit pedibus. ——— *Virg.* Georgic. 2.

London, Printed by *H. C.* for *J. T.* and are to be sold by *Rob. Clavel* at the Peacock in St. *Paul's* Church-yard. 1677.

Imprimatur.

Nov. 15. 1676.

G. Jane.

ΛΙΘΟΛΟΓΙΑ.

A TREATISE OF THE Stone & Gravel

THEIR

Causes, Signs, & Symptoms,

With methods for their

Prevention and *Cure.*

BIBL. CANT. ACAD.

And some Account also of

The manner of the *COLLOTIAN* Section.

Written in *Latin* by *Joh. Groeneveldt* Dr. of Physick, and Lithotomist.

And rendred into *English.*

——— Qui potuit rerum cognoscere Causas,
Ille metus omnes, & inexorabile fatum
Subjecit pedibus. ——— *Virg.* Georgic. 2.

London, Printed by *H. C.* for *J. T.* and are to be sold by *Rob. Clavel* at the Peacock in St. *Paul's* Church-yard. 1677.

402:02

TO THE

Right Honourable

HENRY Lord Marqueſs of *Dorcheſter*, Earl of *Kingſton*, Vi-count *Newark*, Baron *Pierrepoint*, &c. And one of His Majeſties moſt Honorable Privy-Council.

My Lord,

THE *Advantages and Happineſs of Health appear from the miſeries of Diſeaſes; which accompanied generally with unhappy Symptoms, and with Death frequently attended, evince to us, the Excellency of Health, and the Honour of the Art which teaches to preſerve, or to reſtore it. Which is therefore the nobleſt of all Arts;*

because the end and business thereof is health, to be preferred before all Earthly Possessions; and its Subject, the Body of Man, the Perfection of the Universe, and the most Noble of all terrestrial Creatures.

From the sense whereof deservedly all Ages have esteem'd it, and Honourable Personages and Princes have made it their Studies and Recreation. Thus the Learned Ptolemy *King of* Egypt, Sabor, *and the Great* Alexander, *and other Kings and Princes are recorded to have been delighted in learning to know the Admirable Structure of themselves, and this Art.*

In our times, My Lord, we must own, Your Honour has added new Rayes to its Lustre by Your Lordship's own private Studies, and favouring of it. An

Honour

Honour greater than Antiquity ever did her, when it erected a Temple to Æſculapius *the Phyſitian, and ranked* Chiron *among thoſe Glorious Heavenly Conſtellations.*

My Lord, having mentioned Your Honours Studies and Favours, I have nam'd the reaſon of my preſuming to ſhelter this Tract under Your Honours Wings: The Diſcourſes thereof being of the Art wherein Your Lordſhip is ſo exquiſitely skill'd. But that your Honour, and Your Noble Family, may live ever free from the experimental knowledg of the deplorable Diſeaſe, of which it treats, is the hearty deſire and Prayer of,

MY LORD,

The Humbleſt of Your
Honours Servitors.

J. G.

EMENDANDA.

PAge 17. line *ult.* for vein read urine. p. 21. l. 14. for is r. are. p. 24. l. 14. r. and which. *ibid.* l. 21. r. and Ale thick, and new, not fermented. p. 32. l. 10. r. when in the ſubſtance.

Theſis I.

THE *Stone* in the Body of Man is ſo much like to that of the Earth, that it has the ſame denomination; being called in *Latin*, *Calculus*, which ſignifies a little Stone, hard, and of earthy intermixture: In *Greek* Λίθος, the Diſeaſe Λιθίασις. That in the Kidneys Νεφρῖτις, by the name of the Kidneys, which they call Νεφροὺς. And though under that name all Diſeaſes of the Kidneys may be underſtood; yet becauſe of

the greatneſs and violence of the pains of the Stone, whereby it exceeds all other Diſeaſes of thoſe parts, therefore this not undeſervedly takes the name Νεφρίτις, as if we ſhould call it κατ' ἐξοχὴν the Diſeaſe of the Kidneys.

II.

IT is apparenr therefore, that under this name of the *Stone*, we underſtand a ſolid and hard body, grown to the form of a ſtone, eſpecially in the Reins and in the Bladder.

III.

IT is here ſupervacaneous and unneceſſary, to enquire whether it be a Diſeaſe, or the Cauſe of a Diſeaſe, or a Symptom.

tom. Such are only queſtions about a Name, and for divers reſpects diverſly may be ſolved. Yet cannot we think, that it may in proper ſence be called a Diſeaſe (notwithſtanding the authority of *Galen*'s opinion) ſeeing there is no evil diſpoſition of a part, but what either follows or changes the diſpoſition of that part; but it may be called a Cauſe, being apt to cauſe obſtruction, exulceration, great pains, and the like. Which alſo when it has been caſt forth, is by moſt numbered among Symptoms.

IV.

THe Subject I take to be obvious and well-known to all men, the Bladder and the Kidneys. That the Kidneys are

pregnant with ſmall Stones, experience makes us ſenſible, which with dolorous pangs, like the *Uterus*, and pains, and labour they ſometimes ſend forth. Of which this Queſtion comes to be conſidered, Whether only in the Cavity of the Kidneys, and thoſe paſſages of the *Ureters* this Stone is generated, or elſe in the *parenchyma* or ſubſtance of them? And hereof neither can be denied, we having the teſtimony of many eminent Phyſicians, *Euſtachius*, *Foreſtus*, and others, (of whoſe names and places we ſhall not here make citation, having deſigned brevity in treating of this Subject) whoſe practice has ſufficiently proved it. But a Stone growing in the ſubſtance of the Kidney, if it become large, cannot fall into the *pelvis* there-

of

of without dilaceration, and tearing it; becauſe thoſe Caruncles, by Anatomiſts called the *Mammillary Proceſſes*, by which only there can be a paſſage, have ſo ſmall perforations as will ſcarce admit a hair of the head.

What has been ſaid of the Stone in the Kidney, near the ſame is to be underſtood concerning that in the Bladder, That it is incident alſo to two places; the one the Cavity of the Bladder, where it grows in midſt of the Urine; the other, at the end of the *Ureters*, between that double tunicle of the Bladder, where ſometimes it grows, fallen there in ſmall particles from the Kidneys. For the Ureters being inſerted in the Bladder, before they enter thereinto, do paſs its double membrane

brane one fingers breadth; and in the very duplicature of this membrane there often grows a Stone firmly knit to the Tunicles of the Bladder.

V.

BUT here it is not to be denied, that there are also productions of Stones in other parts of the body. For which we have the authority of * *Hippocrates*, and obſervations and experiments of other learned men. Thus *Hollerius* has found Stones in the Brain, *Aetius* in the Eye-lid, *Nicol. Florentinus* under the Tongue, and in the Tonſils, * *Avicen* in the Throat, others in the Arteries, & others in the Heart; ſome in the Stomach, in the Breaſts, in the Gall, in the Liver, and in

*5 *Epidem Hiſt.* 25.

Lib. 1. *de morb.* cap. 48.

* *Lib.* 3. *c.* 9.

in the Meſentery. So experience ſhews us, that Stones are often found in the Gall of an Oxe, Stones of the bigneſs of a Walnut, yellow of colour, which are occaſioned by the deficiency of their paſture; and of theſe there is uſe in Medicine. Thus the Gall of *George* King of *Bohemia* was found turned into a Red Stone. And *Fernelius* tells us, of an ancient man, decrepit, and exceeding prone to be teſty, who being deceaſed, had neither Gall nor its Bladder, but in the place thereof was found a great ſtone. And Stones have been found in the Navil, in the Joints of thoſe who have had the Gout, and in Impoſthumations; whereof we have plenty of Examples from * *Scaliger*, *Geſner*, *Hildanus*, *Fernelius*, *Mercurialis*,

Matthiol. Epiſt. l. 5.

* *In jecore multorum inventi lapides atri, qui in aquam in jecti intumuere.* Jul. Cæſ. Scal. *de Subt. Ex.* 108. *Sect.* 3.

rialis, and others, whose learned writings they may consult, who are desirous of curious observations.

VI.

THE Causes of the Stone are two, the Efficient and the Material.

VII.

FOR the Efficient Cause hereof, the opinions of Physicians are very dissentaneous and different. For some raising their Contemplations to superior objects, derive it from the beginning of our Creation, as a punishment on mankind for our Apostacy, esteeming it not strange, that that returns to Earth, or Stone, which

which from Earth at first was produced according to that saying of the Poet,

Inde genus durum sumus.---- *Ovid. Metam.* lib. 1.

We are said to be of earthy constitution, and have Bones which may be compared to Stones in hardness and solidity. Such are the *Os petrosum*, or Stony-bone in the Organ of our Hearing, and the Teeth, to which our most wise Creator has given a middle Nature between that of Bones and of Stones. But the common and received opinion is, that the Cause of the Stone is to be attributed to the immoderate heat of the Kidneys. For they hold, that those thick, glutinous, phlegmatick, and tartarous Excretions, which are the Material Cause of the Stone, are by little and little dryed up; and the thinner and more humid

humid parts being consumed, are reduced to the consistence of a Stone; even as we see *Medicamentous* Stones decocted and made of Juyces of Herbs and Minerals, by a gentle heat and *exhalation.*

But the improbability of this opinion, is evident to all whom the Authority of the Ancients has not wholly prejudiced. For daily Experience teaches us, that old persons cold of constitution, and women phlegmatic and cold of temper, as well as others, are obnoxious to this malady. But they add, that if a thick and glutinous matter may be hardened into a stony substance by the heat of a Furnace, why may not also a viscous matter be hardned by a preternatural heat into a Stone in the body. But

no

no man could be able to endure ſo great a heat in his body, as is that of a Furnace, which ſhould neceſſarily be before ſuch a matter could be hardned into ſuch a ſubſtance. And if it were generated of a moderate heat, (as ſome are of opinion) in water it would be diſſolvible. As we ſee Clay, which may be dried with a ſmall heat, is reſolved, being moiſtned with water; and the ſame would conſequently follow, eſpecially to that in the Bladder, which holds good *ſerum* received from the Reins; and afterwards expels it, being burdenſome with its weight or acrimony. And if it were cauſed by a continuing heat, then continual Feavers, Symptomatical, Hectick and Conſuming would follow. We cannot

not yeild, that it does proceed from such a heat; though it is certain, that in this Disease there is a heat concomitant, yet that precedeth not the Stone, but occasionally is from it derived; as we see a heat to arise from a prick of a Thorn in the Finger, yet the Thorn is not derived from that heat.

VIII.

TO sum the various and different opinions of Authors, would transgress the Laws and limits of our purpose and Compendium.

Whilst some would make it to proceed from excess of cold (though in body and part very hot) as if it were congealed like Ice; some have the refuge

ſuge of *Occult* qualities for the Cauſe thereof; and others are of opinion, that it is produced by a certain ſalt and lapidific ſort of Spirit, and a certain natural hardning Volatile Earth, as they call it, of the Urine, which produces a new ſubſtance, which they call *Duelech* in the Reins and in the Bladder, after the ſame manner as Sticks, * Trees, Animals caſt into the waters of ſome Springs are ſaid to be turned into Stones. And if we give credit to ſome Hiſtories, whole Companies of Foot, and Troops of Horſe, in ſome places, from a certain Spirit breathed forth from the Earth, are ſaid to have congealed into Stones. But in the mean time they are to conſider, that that lapidific penetrating Spirit, if ſuch an one in

* *In Averonia Rivus eſt qui ex propria ſpuma pontem ſibi lapideum conſtruxit.* Quercet. *Art. Med. Tom.* 3. *c.* 9.

in the Urine there be, would not ſo much occaſion it in the Bladder, as rather turn the Kidneys and the reſt of the Body into a Stone, as in the prementioned example. It ſhall ſuffice us now to add, and ſhew the Cauſe thereof; which is plain and eaſily conſpicuous.

IX.

IN the *Analyſis* of the Urine it appears, that it conſiſts of divers parts. For, beſides, that there is in it, a plentiful water, which is the Baſis of the Urine; and a ſmall part of Choler, which confers that Gold-like, or Citron Colour unto it; as alſo a phlegmatic matter, ſwimming for the moſt part on the top, making a Ring,

and

and adhering to the Veſſel containing it; there is alſo a certain ſalt and earthy part mixed with the Urine from the neceſſary *aliment*, perceivible from its Guſt, and what is contained, being naturally in all Urine. This earthy part therefore, thick, and leſs ſtirring, (the material cauſe of the Stone) to which alſo it is very poſſible ſomewhat of ſalt is admixed, if through default of the *chylifying* parts it abound in greater quantity in the body, or be not well mixed with the blood; not being well digeſted and ſeparated in the ſtomack by reaſon of the great plenitude thereof, (with which much nouriſhment muſt neceſſarily abound) from the ſtomach with the chylus it paſſes into the veins, and is carried thence

thence with the blood through the ventricles of the *heart* into the *Aorta* artery, thence to the *Emulgent*, and there in the farthermoſt branches of that artery, or in the muſcles next thereunto; or if it can paſs thoſe *Mammillary caruncles*, it eaſily reſts in the tubules or baſon of the kidneys: where ſticking faſt, it at firſt becomes a ſmall particle, which, with *Fernelius*, we may call the Kernel, the Rudiment and Original of the Stone, which with time proceeding the like new matter more and more falling to it, and feeding it, grows daily with one ſhell upon another, till at length no Gluten intervening, but that immediate Contact of ſmall parts, it becomes a Stone, coagmented of (as it were) many plates together.

thor. Even as we ſee in the *Bezoar-ſtone*, and likewiſe in Onions conflate of divers coats one upon another. Thus it grows by little and little, as our experience teſtifies, and our ocular inſpection.

X.

NOw that gravellous and calculous conſtitution of the reins which the Learned *Fernelius* doth inſtance, if we grant him a favourable interpretation, may in ſome manner be admitted. If thereby we underſtand not an occult *lapidific* quality different from theſe cauſes manifeſt (as ſome would render it) but a greater ſtreightneſs of the pores, and thoſe ſmall veſſels in the kidneys, through which the vein

is naturally ſeparated: and this ſtreightneſs of the pores and paſſages is either from our *Embryoniſme* and firſt original, to which eſpecially relates an hereditary diſpoſition, or elſe it is acquired in the revolution of our age from thoſe things which we call Non-natural. For it may very eaſily be credible, that that matter ſedentary, and not apt for motion, being thick, and of a terrene *Indoles*, finding thoſe paſſages ſtreight through which it ought to enter, does naturally ſtop and ſettle. Of this we may take a familiar example from the *Churn*, where the *butyrous* part is ſeparated from the whey only by motion and agitation, which reſts and ſettles becauſe it conſiſts of parts which are unapt for motion:

A not unlike ſeparation is alſo made in new Wine, as the moſt Ingenious * *Des Cartes* does moſt learnedly demonſtrate. And thus at length, growing more and more, by proceſs of time, it is formed a perfect ſtone.

* *Part.* 4. *Pag.* 14.

XI.

OF the Stone in the Bladder, (its generation not differing from the former) there remains no difficulty to be ſolved. But that we may here note that it does not always take its original from the bladder, but ſometimes alſo in the reins. For the ſtone growing in the *tubule* or *pelvis* of the kidney, ſometimes alſo in the very ſubſtance thereof falling through the *Ureter* into the duplicature of the bladder, it

there ſtops up that *Cavity*, where the ſmaller & more *lubrick particles* paſs away, but the thicker & more groſs there remain; which grow ſticking faſt to the *tunicles* of the *bladder*. Sometimes it paſſes through that paſſage into the *cavity* of the bladder, where not being ejected through the *Urethra*, it lies at large, growing and increaſing with the continual afflux of new matter. Thus the Stone in the bladder has the ſame efficient and material cauſe with that of the kidneys, and differs only in the place thereof, and its ſubject.

Tho ſome do ſeem to admire how a ſtone can be form'd in the water of the *Urine*, which they would rather think ſhould diſſolve it; upon which perhaps *Fernelius* derives the beginning of

of the Stone from the kidneys; but they need not wonder hereat, if they are pleaſed to conſider how gravellous, and alſo hard ſtones do grow in the Sea, and in Rivers, though continually waſhed with the waters; and theſe are not unlike to thoſe in mans body.

XII.

THE remote and mediate Cauſes whereby the matter of the Stone is communicated to the maſs of blood, and to the reins very often, is, the inordinate uſe of victuals, and intemperance. For hereby not rarely it eveenes, that abundance of humors concurring through ſo many veſſels, the *glandules* being above meaſure filled, and the pores which do

tranſmit the *chylus* cloſed and obſtructed, the concoction of all is impaired, and a ſink of corrupt and putrefying humors is promoted, from whence becomes the original of continuing Fevers, and other contumacious indiſpoſitions in the *Me-*
Lib. 1. c. 4. *ſentery*, as witneſſes *Veſlingius*. Hereby not only a diſtemperature of the whole body, but there becomes alſo an evil conſtitution of the organs, matter of the Stone is produced, the ſtomach weakned, its *ſpirituous fermentation* is extinguiſhed: *acid* belching, *fluctuations* in the ſtomach, and *flatulencies* are excited. Under this kind of Victual is comptehended *bread* not well fermented, nor baked with a moderate heat, very fine, and having too much of a clammy and ſweetiſh quality.

lity. And, in ſome bodies, much uſe of *cheeſe*, which is difficultly concocted, and enters not thoſe *orifices* which convey the *chylus* from the *Inteſtines* through the *lacteous* veins, cauſes obſtructions, thickens the blood, and with its *terreous ſalt* generates the Stone. Herein I preſcribe not any directions to perſons ſtrong in body, healthy, and accuſtomed thereunto; to them their cuſtom is a ſecond nature, yet hereof a choice and and moderation is to be regarded. Much of the ſame nature alſo is too conſtant uſe of *Beef*, *Pork*, and *Goats-fleſh*, and meats very *ſalt* and *ſmoked*, which do carry much *nitrouſneſs* with them, and are not very eaſily concocted. To which may be added, the generality of Fiſh wanting *ſcales*, and

breeding in the *mud*, ſuch as *Eeles* and *Lampreys*. And a too frequent uſe of *Ducks*, *Geeſe*, and other *Water-fowl*, produces a ſuperfluous and excrementitious humidity; and *Fruits* alſo earthy of taſte, and unripe, are in like manner acceſſary to its production.

There are alſo divers ſorts of Drinks which breed the Stone in the reins, and in the bladder: whereof with the firſt we may reckon *New-beer*, which has too much of the Hops. Thus *Geſner* relates that *Alder* boiled in the Brewers-Fatt with their Beer, and afterwards laid for ſome time under ground, covered with gravel, turns to an hard ſtone. And *thick* and *ſtanding-water*; and that melted from ice, or taſting of the earth, it paſſes through, and carry-

carrying the ſtrength of Minerals with it, as of *Alum*, *Sulphur*, *Iron*, and ſuch like, which therefore are not to be uſed as ordinary drink, but medicinal. And alſo drinking of cold-water after ſweating, as *Celſus* obſerves.

And *tartarous Wines* do moſt certainly concur to the product hereof, and Wines ſweet, not fine, and new. Of which ſort are a great part of the *Moravian*, *Italian*, and *Malaga* Wines, and in ſome places *Rheniſh*, in which a *ſaline tartar* is ſo nearly conjoined, that they are ſcarcely ſeparable, but with it do paſs to all the veſſels of mans body, ſticks to the reins, and to the joints, and imbreeds the ſtone and the gravel.

Thus are courſe Wines abounding with a dreggy *tartar*.

Yet

Yet ſmall Wines do rather preſerve from the Stone, than tranſmit ſuch impurities to the reins, and to the bladder.

XIII.

BEſides Meats and Drinks there are other *non-natural* things which do promote the generation of the Stone.

As the *Air* thick, troubled, rainy, and cold, thickens the humors, procreates Phlegm, and Crudities, it partaking of a certain *ſaline* and *terreous* conſiſtence.

And immoderate Sleep makes the perſon dull, and obtunds the heat, and creates Crudities.

And too much * Eaſe and Sloth corrupts the blood, nouriſhes an impure *colluvies* of humor, the firſt principles of the Stone, and exceedingly promotes it.

* *Et obnoxii calculo Podagrici, & alii quorum renes, jecur, lumbi multo iu dorſum decubitu caleſiunt, & ob intermiſſum corporis exercitium, dolorem, & vigilias, concoctiones probe perfici non poſſunt.* Hild.

And too much motion preſently after meat cauſes a fulneſs in the ſtomach, and hinders concoction.

And there is an inordinate, more than bruitiſh *Salaciouſneſs* which moſt certainly promotes the riſe and growth of the Stone, heating and obſtructing the *Uretery* parts.

And ſuch as in forreign Climates, or elſewhere in the Winter travel through deep Snows, eſpecially with empty ſtomachs, fall

fall into insatiate appetites, and become obnoxious to obstructions, and to the Stone.

And the *Urine* and *Excretions* too much retained, produces *noxious* vapours, dulls the heat of the body, does dispose to the Stone, and afterwards hardens it. Thus *Riverius* observes that the *Spanish* Nation does emit their *Urine* much quicker than others, and are not subject to the Stone as other people.

And the *passions* of the mind being violent and exorbitant, do contribute to the generation of the Stone.

For *Sadness* by degrees does impair the strength, cools and dries the body, hinders digestion, causes sharp humors, and increases them.

And *Anger* kindles Fevers, excites

excites choller, and diſturbs the ſpirits.

And *Fear* occaſions an acidity in humors, diminiſhes the ſtrength, and abates the *Vital-heat*.

There is alſo an *hereditary* diſpoſition, which conveys the Stone by ſucceſſion and inheritance; though this does not always neceſſarily follow.

Unto theſe Cauſes the Aſtrologers add a *Conjunction* of *Saturn* with *Mercury* in the eighth Houſe, under which they ſay the child which is born will be troubled with the *Stone*. But whether the influence of the Stars can have ſuch effects upon mans body, I leave it to the Learned to determine.

And

XIV.

AND now it is not impertinent to consider the *differences* of the *Stone*.

For *Magnitude*, it is great or small.

For *Colour*, it is red, yellow, ash-colour, black.

For *Figure*, round, long, cornered, close on the sides.

But the principal differences are from the *subject*, which is either of the reins, or of the bladder.

The next from the *degrees* of it, wherein it is either *sand*, which takes its being in the pores of the kidneys, and differs from the Stone only in its *magnitude*. Or else it is *Gravel*, which with *mucous* matter inter-

intermixed with the * ſand, is thereunto coagulated, and theſe are the *Rudiments* and *Original* of the *Stone*.

* *Arenulæ mutuo adhæſu inter ſt colligatæ calculum coagmentant atq; componunt.* Fernel.

There are alſo Stones *tophous*, which have the figure indeed of Stones, but are brittle.
And there is the perfect Stone, which is hard and ſolid.

The

XV.

THE *Pathological* ſigns of the the *Stone* in the kidneys, though properly there be none but what are equivocal and common with other Diſeaſes, yet theſe for the moſt part do indicate it.

A fixed *Pain* about the region of the loins, continuing, heavy, lying like a weight within the ſubſtance of the kidneys, which has a duller kind of *ſenſe*. But when it is in the head of the *Ureter*, it is ſharp, tearing, and of all moſt tortering. 2. A difficulty of bending the *Back*, the *Nerves* thereof being ſtretched and preſſed together. 3. An *heat* in the *Loins*. 4. A ſtupefaction in the *Thigh* and *Leg*, on the ſame

ſame ſide; the muſcle *Pſoa* being preſſed together by the weight of a great ſtone, or that *Nerve* which is branched through all the *crural* muſcles. 5. A retraction of the *teſticle* on the ſide affected through the drawing up of thoſe veſſels which are divaricated to the *teſticles* from the *reins*. *Nauſeouſneſs* and vomiting through the conſent of the *reins* with the ſtomach, which is occaſioned not ſo much through means of the *Peritonæum*, whoſe membrane each does participate; as by reaſon of that common *Nerve* inſerted into the proper and internal *tunicle* from the *ſtomachic* branch of of the ſixt pair. 7. The *Urine* is many times bloody, which is occaſioned eſpecially by a ſharp ſtone which tears and

opens the ſmall veins which are ſpread through the ſubſtance of the kidneys.

And it is to be obſerved that ſometimes in the beginning the *Urine* is thin, like common water in conſiſtence, and very little in quantity, becauſe the kidney is obſtructed and ſtop'd up with the *Stone*.

But when the ſtone is paſſed through the *Ureter* into the bladder, the *urine* is rendred * thick, *turbid*, and moſtly plentiful.

* *Calculus e renis ſubſtantia exturbatus in Cavum, renis partem cui adhæreſcebat cum evellitur ſine doloris ſenſu divellit & quaſi dilacerat, ſaniem prolicit, quæ urinam craſſam, turbidam, ſubnigramq; reddit.* Fernel.

But becauſe there is ſo great a likeneſs of this Diſeaſe with the *Colick*, that not only audacious *Empiricks*, but alſo the moſt rational *Phyſitians* may err

err herein; therefore, for diſtinction, theſe ſigns are importantly obſervable. If the pain be above the *reins*, it proceeds from the *guts*, not from the *reins*.

If it be from the *reins* it tends outward, but removes not from the ſame place, only when the ſtone falls from its firſt ſtation into the *Ureter*.

But the *Colick* does wander, changes its place, and does progreſs through the whole circuit of the *guts*, and falls toward the *groin*.

And it is to be obſerved, that thoſe who are troubled with the *Stone*, or *Gravel*, are better after their meals; thoſe with the *Colick*, worſe.

XVI.

* *Lib.* iiii. *de morb.*

* THE Prince of Phyſitians, *Hippocrates*, computes the ſigns of the *Stone* in the bladder very compendiouſly, in this manner. In making their *urine* it pains, and it comes by little and little, like the *Strangury*, and it is ſomewhat bloody, as if the bladder were ulcerated by the *Stone*: and the bladder is hot, and inflamed, but only the upper part of the *præputium* does ſhew it.

* *Arenas multi mingunt neq; calculoſi ſunt.* *Quoniam illæ non coguntur in lapidem niſi viſcido aliquo & crudo humore ſuperveniente, ad quod itidem & tempore eſt opus.* Holler.

It is alſo when * ſand is voided.

And he adds, that children do rub and pull the parts wherein they are pained. To

To theſe ſigns we may add the ſtretching of the *Virile Part*.

A ſenſe of an *heavineſs* in the *perinæum*, and the whole region of the *groin*, when the ſtone is large eſpecially.

There is alſo a continued deſire of making urine, which, when done, there enſues often a violent pain, chiefly in the *glans*. This is occaſioned for the moſt part from the ſtone falling into the *Urethra*, and moving with the water excreted.

There is alſo an endeavor of each egeſtion at once, which proceeds from the conſent of both *Sphincters*, and that community and colligation of the *Nerves* which they receive both from one branch.

But it is known moſt certainly by manual operation, by the *Finger* or *Catheter* whether it be a ſtone, or how many there may be. Whether it be large, or ſmall, hard, or the contrary; which to know is very material.

Hitherto alſo relates the knowledg of the Cauſes *antecedent*, of the Temperament and Conſtitution, of the Diet which they have uſed, and the Symptoms which they have undergone.

For the pains muſt needs be grievous if the *Stone* be large, hard, and rough.

It is alſo neceſſary to know whether the *Stone* be incloſed in a bladder or bag, Whether therewith it grow to the membrane of the bladder, or without it.

Yet

Yet this is moſt difficult to be known unleſs with Finger or Catheter it be experimented.

Theſe are the Diagnoſtic ſignes of the *Stone*, to the Prognoſtic now we proceed.

XVII.

THat * Children are moſt obnoxious to the *Stone* of the Bladder, the Ancient to that of the Kidneys, is the Prognoſtic of *Hippocrates*: And the Diſeaſes of the Reins and of the Bladder are difficultly cured in Ancient perſons.

* *Et in Infantibus inordinatus victus craſſos, crudos, & indigeſtos humores cumulat & Phlegma quod cum Urina ad veſicam & meatus deducitur: præcipue cum parum exercentur habent urinarios anguſtos & debilem facultatem expultricem.* Hildan.

An hereditary diſpoſition to the *Stone* deſcending from the

Parents to the Children oft ſcorns and eludes all, though the beſt means of Phyſick, adminiſtred for its Cure or prevention.

In reſpect of Medicine, that in the Bladder is harder to be cured than that in the Reins, though with Chirurgery often it is eaſier. Thoſe who uſe to be looſe in their Bodies are moſt ſeldom troubled with the *Stone* in their Kidneys.

The *Stone* in the Kidney, and withal an Ulcer is deſperate; yet in this deplorable exigence Nature ſometimes to admiration has wrought a Cure, for the pains tending outward to the Spinal Muſcles, an Impoſthumation ariſing; *Stones* have been that way caſt forth and the Ulcer conſolidated; and there is none but muſt acknowledg that the

Stone

Stone is a diſeaſe, violent * and dangerous, attended with Inflamations, Ulcers, dreadful pains, Reſtleſneſs, Obſtructions of the Urine, Fevers, and other lamentable ſymptoms.

* *Lapis vesicæ à ſolâ manuali operatione ſanatur.* Galen. Com. v. in vi. Epid.

Yet if the *Stone* in the Bladder be not very great, nor in an ill habit of Body with great plenitude of Humours apt to generate the *Stone*: and if there be not a diſpoſition hereditary unto it, Prognoſtic of good may be taken, but evil if there be the contrary.

But if the *Stone* be very large and hard, there follows a neceſſity that the perſon to be freed ſubmit to Chirurgic operation; though indeed it be full of danger.

If the *Stone* be very large, as that which weighed twenty two Ounces, whereof *Hildanus*, *Obſervation.*

ſervation. lib. 1. ſuch are to be eſteemed deſperate; and according to *Celſus* not to be undertaken.

And when a *Stone* grows to the Membrane of the Bladder, incloſed in another * Veſicle or Bladder, or without it; the perſon is in the ſame predicament as infirm Old perſons and weak Children.

* *In nobili quodam cui vivo calculus deprehendi non potuit, poſt obitum calculi ingentes ſacculo veſicæ adnato incluſi reperti ſunt, qui ſi extracti fuiſſent exinde miſere occubuiſſet.* Hildan. Cap. 8. Bauhin. Theatr. Anatom. Cap. 31.

Yet if the perſon be of ſtrength and of good Conſtitution of Body, the *Stone* not thus exceſſive large, though there be more of them, the *Divine* Aſſiſtance implored, the Operation may with good Courage be undertaken, and with good hopes of the ſucceſs thereof.

In

In the Female Sex the Operation may more ſecurely and eaſily be performed.

XVIII.

HItherto for the Theory of this dread Diſtemper. We have conſidered the ſeveral Cauſes, Signes, Differences and Symptoms thereof, and proceed now to the Practic, for its Cure and prevention. And herein theſe things are required.

That the Cauſes occaſioning it be prevented, that thereby its growth and increaſe may be hindered.

And that when it is grown in the body it may be removed, and the Symproms and great pains enſuing be appeaſed, and the uſual difficulty of Urine redreſſed.

Theſe

Theſe are to be effected by ſelect Remedies of Diet, Medicine, and Chirurgery.

XIX.

FOR prevention it ſtands us upon to be careful that the Remote Original matter introduced by enormous Diet be avoided; and on the contrary, uſe of Diet convenient be regarded.

Therefore we are to uſe *Meats* which are of eaſy Digeſtion, not of juice * excrementitious and ſuperfluous; but

* *Cavere oportet cibaria ſubſtantiæ duræ, & quæ ægre manducatione atteruntur, & quæ multum ſubſtantiæ habent: gravis item qualitatis, & quæ difficulter commutantur ac ſupernatant, & ægre per alvum ſubeunt. Item quæ meatus obſtruunt, aut diutius in Corporibus inſident. Ex hujuſmodi enim cibis Venter labore fatigatus, ipſos aut crudos, aut ſemicoctos ad Hepar & Renes digerit & inepte excolari inſpiſſantur.* Foreſt.

which

which have an inciding and attenuating faculty. Not to ſum up many which might be named, ſuch Meats as have not been already excepted are to be made choice of, and Broths alſo of Veal, and of Capons are very conducent, prepared with Charvil, Sorrel, and Barley, eſpecially in the Spring.

And undoubtedly if in any Malady, Sobriety and Moderation is in this moſt abſolutely expedient.

And we are ſo to moderate the *Paſſions* of our mind, that none of them by its exceſs may be prejudicial.

XX.

NExt the *Approximate* matter, *ſc.* a collection of crude and thick Humours, contracted in the Body by inordinate Diet, or otherwiſe, is to be diverted and evacuated from the Reins.

For which purpoſe mild Cathartics are very profitable, ſuch as *Manna*, *&c.* yet not *Caſſia.*

Vomiting alſo where it may be endured, repeated often is uſeful, which if it proceed of it ſelf is no way to be hindered, if not is conducing by Medicine accommodate.

Hereby * Noxious Humour gathered

* *Pituitam etiam evacuare utile & diaſoſticon. Etenim hanc viâ Urinariâ communicat totum Corpus, vitio præſertim ventriculi languidioris, excrementa multa ex improbo victu congerentis, quæ ad Renes delata, & à præternaturali eorum calore excocta in Lapidem tandem indurantur.* Prævot-

gathered together in the body, with good ſucceſs frequently is carried off and removed, that it fall not to the Reins

But if ſuch matter be already fallen upon them, it is neceſſary that forthwith it be removed by the uſe of Remedies moderately diuretic. For which purpoſe *Terebinthinate* preparations are unqueſtionably excelling, judiciouſly directed, compoſed, and adminiſtred; whereof the Learned *Beverwick* gives a very obſervable Deſcription.

And withal Mineral Waters are not negligible to diſſolve the Matter of which it is generated, and with the Gravel to carry it away, and withal to mitigate the heat of the Reins which hereupon is moſt frequently incident.

XXI.

XXI.

BUt the *Stone* being already formed, the next indication is to remove it; yet a large *ſtone* being in the Kidneys, it is not at all to be forced thence; if it be ſmall and in the Pelvis of the Kidney it is convenient it be forthwith removed.

But the *Stone* being large, if it be removed into the Ureter, with the torturing pain * which attends it, oft cauſes Convulſive motions, and Swooning, which uſher death unleſs timely mitigated by intrinſic Remedies, and Fomentations uſed externally.

* *Natura à Renibus uſque ad veſicam ureteres anguſtos admodum condidit, in quos ſi calculus decumbat eiſque impactus hæreat, dolor ingens, intumefactio interna, febris, ſæpè etiam delirium, lipothymiæ, aliáq; periculoſa ſymptomata ſequuntur; adaucta poſtmodum inflammatione & ſubſequente gangræna de hominis vitâ actum eſt.* Hildan. Cap. 25.

Before

Before a ſmall *Stone* is to be removed, the way through which it is to paſs is to be made lubrick and eaſy with Oyls of Almonds, and Olives, and ſuch like.

Malactique Clyſters alſo are very commendable of Emollient herbs and roots, with which diuretics may very properly be added, or elſe pure Oyles, of Almonds, Chamemel, or Lillies.

Extrinſecally Cataplaſmes are uſeful compounded of Emollients, and Fomentations likewiſe of ſuch Ingredients, with which ſome refrigerants alſo are to be admixed to alleviate the Pains.

Nor otherwiſe are Unguents ſuch as that of *Althæa*, with the Oyles of Scorpions and Sweet Almonds.

And a Bath of freſh Water with emollient herbs, adding ſome of thoſe which we call *Lithontriptics*, is an effectual Remedy to relax the paſſages.

Theſe things according to their ſeveral requiſitions preceeding, next ſuch take place as are proper for the removing of the *Stone*; of which ſort are thoſe who have the name of *Diuretics*, whereof ſuch a *Farrago* there is to be found in Authors that we may here very well ſpare their mention.

Anodynes alſo are to be added to prevent the pains attending: and ſolutive Remedies alſo are to be premiſed, that nothing 'Noxious be therewith carried into the Reins.

XXII.

THus it is evident, that when a *ſtone* is large in the Kidney, it is not thence to be forced away; whence the caſe muſt neceſſarily be very difficult and dangerous.

Now whether there be any Remedy in Nature of Virtue to diſſolve ſuch a *ſtone*, it has long and much been controverted.

If it be brittle, and of a *laxer* ſubſtance, that it may be broken, it is not diſputable, experience ſufficiently confirms it. For which purpoſe *Matthiolus* and *Dodonæus* do attribute a a wonderful efficacy to that which we call *Virga Aurea*, and *Arnoldus De villa nova* thereto ſubſcribes his *Probatum*, as ex-

excellent in *Syrup*, *Paſte*, and in *Electuary*.

Peradventure ſometimes *Imagination* may add to the Efficacy of the *Medicine*, and ſometimes alſo may be the more prevalent; as *Crollius* rightly obſerves that there are many cured by *Imagination*.

For Nature often ſubmits to the thoughts, and vehement deſires of the ſoul, and our ſpirits being affected, the body is affected alſo, in which the ſpirits do reſide.

As Principal in this kind is that *Medicament* commended which is prepared with the powder of *Millepedes*, with which *Hartman* acquaints us, that by his preſcription a *ſtone* has been broken larger than an egg; and the Learned *Laurenbergius* aſſures us, that himſelf has

has been cured thereof by the ſame.

That Spirit of *Nitrum* does break a ſtone of mans body when it is out of the body, is moſt certain and experienced. But ſuch a quantity thereof as is requiſite hereunto, is not at all to be given or injected into humane body.

The *Nephritique* Wood, *Sanguis Hirci*, ſeed of *Gromwell*, as alſo *Saxifrage* and *Eryngy* are commended as *Lithontriptics* of no inferior efficacy, duly ſelected and adminiſtred.

But becauſe the foundations of future health are laid in the firſt conception, from whence the good or evil principles of health are tranſmitted to the Off-ſpring; Therefore a diſpoſition hereditary to the *Stone* is not to be ſuppoſed Curable by

any Medicine, only convenient diet is herein availing.

XXIII.

THat grievous and miſerable pains do attend this ſad diſtemper, is known, and to be expected.

Which, to mitigate the means deſcribed to *lubricate* the paſſages, are very conducent, *Oyls*, *Unguents*, *Bath*, *Clyſters*, *Fomentations*, *Cataplaſms*; with *Emollients*, *Diuretics*, *Refrigerants*, and ſuch like.

Which, if they attain not the deſired ſucceſs, in moſt raging pains *Narcoticks* may be uſed, ſuch as *Philon. Rom. Requies*, and others in due quantity and ſeaſon.

Deplorable alſo, and a frequent concomitant herein, is that

that ſad Exigence, difficulty of Urine, or its total ſuppreſſion. For which, principally expedient are *Liniments* externally uſed, (and ſometimes, but with caution, internal *Diuretics*) *Fomentations* alſo and *Cataplaſms*. And if the Urine be ſuppreſſed by a ſtone fallen to the neck of the bladder, *Supine decumbiture* is uſeful, with the feet raiſed, the body ſhaken to remove it away.

Or elſe it is to be put back with a *Catheter* put up into the cavity of the bladder.

XXIV.

THus briefly we have preſented you with the method for the Cure of this moſt dolorous Malady, by Remedies *Dietetic* and *Pharmaceutic*. The next and laſt means for the Cure thereof, is by *Chirurgery*. Wherein *Phlebotomy* and *Cupping-glaſſes* are many times of uſe, and in extreme neceſſity, Exſection.

Quanquam animus meminiſſe horret, luctuq; refugit.

If *Plethory* and heat of blood be offenſive, it is convenient that a Vein be opened.

That *Cupping-glaſſes* applied to the loins, have removed ſtones from the kidneys into the bladder, it has many times been experimented. But

But when the ſtone in the bladder is greater than can by any art be forced away, there being no Medicine in Nature of Virtue to diſſolve it, the extremity of the Diſeaſe requires the laſt and moſt dangerous Remedy, which is *Exſection*.

And of this, divers Ages and Artiſts have ſtill uſed divers and peculiar methods; of the chief whereof we ſhall here give ſome account.

The *Lithotomiſt* making *inditon* of his middle-finger of the left-hand into the body, with the right he depreſſes the lower part of the *Venter*, that the ſtone may the better fall to the neck of the bladder. Then in the *perineum* (in the proper place, as art and experience is to direct) on the left-ſide of the *Suture* he makes inciſion upon the

the ſtone, and then endeavors to caſt it forth with his finger. Sometimes with ſucceſs he thus caſts it forth, eſpecially if the ſtone be ſmall: which if he cannot, he takes it forth with his Inſtrument, which we call a *Scoop*. But this manner is dangerous, leſt the parts about the neck of the bladder, or the *Sphincter* thereof be injured, which eaſily may be, from whence unvoluntary *Miction* or a *Fiſtula* may follow, or great *Hemarhage*, and *Flux* of Blood, by reaſon of the multitude of veins there meeting together.

Another method is this;

Univerſal preparation preceding, he conveys a *Catheter* which is *concave* and open on the one ſide into the bladder upon the ſtone. Afterwards with

with his *Inciſion-knife*, one half thereof being covered, he makes a *Section* as far as to the *Catheter*; next he puts his *Director*, an Inſtrument ſo called, into the wound on the *Catheter*, and therewith *dilates* the wound; then he puts in his *Scoop* guided by the *Director*; then draws the *Director* forth, and with his fingers put up as before, he guides the ſtone to the *orifice* of the wound, and with an hooked *Scoop* pulls it out.

Another is this.

Inciſion being being made, he puts a *Forceps* into the wound by the guidance of a *Director*, which being taken away, he takes hold on the ſtone with the *Forceps*, and takes it out, which he does, when with the hook he cannot.

A fourth manner is called the *Franconine Lithotomy*, from *Petrus Francus* the Author, a moſt expert *Lithotomiſt*. Wherein having made inciſion, he does not forthwith take out the ſtone, unleſs in the wound it be in view: but binding up the wound after the accuſtomed manner, lets it reſt for ſome days.

Nature ſometimes in a little time caſts it out, which if not, with his Inſtrument he takes it forth. This is of uſe when the perſon is very infirm and weak.

A fifth, but very dangerous manner there has been, which that Excellent *Lithotomiſt Petrus Francus* deſervedly rejects, and moſt ingenuouſly blames himſelf that once he did uſe it.

A child two years of age was

was miſerably tortured with a *Stone*, (ſo large, that it was not poſſible to be taken forth without *ſection* of the *membranous* ſubſtance of the bladder, or its *Sphincter*) much like to an Hens-egg in bigneſs, which could not by any art be brought down to the neck of the bladder. Moved at length by the upbraids of the Parents, and their extremely urgent importunity, he made *inciſion* in the *groin*, and on the upper-part of the *Os pubis*, in manner of the *Ceſarean Section*, cutting through the bottom of the bladder, and ſo took forth the ſtone. Which manner he adviſes that no perſon undertake, who regards his Conſcience or Reputation, though this child after much weakneſs did recover. For the wounds of the bladder are mortal,

tal, for the moſt part, as moſt rightly ſays the Prince of Phyſitians.

And thus when a great ſtone obſtructs the paſſage of the *Urine*, which renders the caſe of the perſon deſperate, when it cannot be removed, much weakneſs alſo attending, an *inciſion* made in the *Urethra* to let forth the *Urine* is equally and without diſpute dangerous. For notwithſtanding, that through this paſſage ſometimes the *Urine* may paſs away, yet withal this unhappineſs enſues, that when they ſtand upright, or walk, the ſtone falls again to the *Urethra* miſerably torturing as before.

In this great exigence therefore and extremity, when the ſtone is of ſo great *magnitude* that it cannot be taken away with-

without ſuch *inciſion* as will occaſion moſt certain danger of death. Let the *Patient* be hereby adviſed not to *abbreviate* his life through impatience in this or any other manner, but with *Fortitude* and *Conſtancy* becoming his *Chriſtianity*, expect deliverance from the Supreme *Phyſitian*, who only by his Almighty Power can ſet limits and a period to all miſery.

A better manner is by the uſe of an Inſtrument, which that Excellent Artiſt *Fabritius Hildanus* has invented; which being put into the neck of the bladder, may be opened; and is much like to the Inſtrument which they call *Speculum Matricis*. Having made *inciſion*, he puts this Inſtrument into the wound, then he opens it, and with the ſame he *dilates* the wound;

wound; having opened it, he therewith takes hold on the ſtone, and takes it forth. In the *Female Sex* with much leſs difficulty, without *inciſion* or much *hemarhage* this operation may be performed. For the *orifice* of the bladder eaſily appearing, it is ſufficient that a *Catheter* be inſerted, and therewith this Inſtrument, with which the neck of the bladder being dilated, with the *Forceps* the ſtone may be taken forth. Yet ſometimes herein the largeneſs of the ſtone cauſes a neceſſity that a ſmall *inciſion* be made in the *orifice* of the bladder; which with greateſt caution is to be performed, leſt the *Sphincter*, as moſt eaſily it may, be injured; from whence, and too much *dilatation* alſo, and *extenſion*, it is known that various inconveniencies may follow. An-

Another manner there is of later invention, which has very much bettered and improved this of *Hildanus*, and is called the *Collotian Section*, from Monſieur *Collot* the excellent *Lithotomiſt* of *Paris*, who from his Great Grandfather was deſcended from a continued *Series* of *Lithotomiſts*, and deceaſed not many months ſince, to the great loſs of the diſeaſed, thoſe with the *Stone* eſpecially. And this manner excels that of *Hildanus* and others which lately have been much in uſe, in reſpect of the ſafety, eaſierneſs, and expedition of the performance.

It being done upon a *Catheter* made *ſulcate*, and bending, according to the form and dimenſions of the *cavity* of the bladder into which it is to be inſer-

ted. The *Section* being made next a *Director* is uſed, whereof there are three ſorts, and to be according to the largeneſs of the ſtone, to guide the *Dilator*.

The *Dilators* are diſtinct Inſtruments, and alſo of divers ſizes, which make way with the greateſt eaſe and expedition for the taking forth of the ſtone.

In this Operation *Forceps's* are uſed (to take out the ſtone) ſtreight, and *roſtrate*, and round, and oval, and with other differences, according as the nature and magnitude of the ſtone and of the *orifice* ſhall require.

With this manner, and with ſuch Inſtruments the Famous Monſieur *Collot* has cured very many by a ſedulous and frequent inſpection, of whoſe Ope-

ration

tion the Author of this Treatiſe * has ſucceſsfully practiced, and does practice this manner of Cure.

* *Et hoc operationis modo* Nov. 8 1676. *demptus fuit calculus cuſpidatus Nepoti D.* Knouls *Galeropolæ juxta inſigne Urſi albi in vico dict. St.* Tuly *non procul à ponte* Lond. *(Liter. D.* Watſon *Coll.* Lond. *cæteriſq; præſentibus) qui jam (die 30) elapſis tribus hebdomadis, D.G. totus convaluit: nec multo ante ſectus fuit Fil. D.* Boc *Aromatarii in adjacenti vico dicto St.* Barnabæ, *integra D. G. nunc itidem gaudens valetudine.*

The ſtone being with great care taken forth, with the gravel and ſuch offenſive matter, let the perſon be preſently ſet in a warm Bath ready provided, prepared of moſt *adſtringent*, refreſhing, temperate and emollient Ingredients: which is the beſt way to ſtanch the flux of blood, & to refreſh the parts and the perſon: which being ſtanched, let him be taken forth, and laid in a warm bed, and *ſtupes*

dipp'd in Bath of the ſame kind be applied to the wound. *Reſtringent* Powders being alſo in readineſs for any occaſion.

Let all parts from his loins and navel be anointed as low as to his knees with Oils of Violets, and of Eggs, and of Roſes, and give him a ſpoonful or two of Cordial prepared with Species of *Gems*, *Alkermes*, & the like in appropriate *Vehicles*, with waters of Roſes, Cinamon, *&c.* and upon occaſion let Bolſters dipp'd in Cordial Water be applied to his wriſts, and to the region of his heart, and let him reſt one hour or longer without diſturbance.

Then it will be convenient to let him drink *Emulſion*, and a little warm broth.

But *Traumatic* Drinks are not in this caſe to be uſed, being

ing apt to obſtruct, nor Wine which may inflame, unleſs in caſe of frequent *Lipothymies*.

Then to farther Suppuration, and to mitigate pains, digeſtive liniments are uſeful, of *Colophonia*, &c. with Wax, Saffron, and Gum-Elemi. Gravel and feculencies of the bladder, which Nature drives to the orifice of the wound, is every day to be taken away with a Feather dipp'd in Appropriate Oile; afterwards with Liniment *de Cortice Quercus*, or other convenient Unguents, let the wound be carefully healed up, and with all poſſible expedition conſolidated.

FINIS.